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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2019-03-05-18** **Date: 24-01-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer's Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	21-01-19
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	22-01-19
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.2	_
2	Finess by Air permeablity method (m^2/kg,Min)	249.5	225m^2/kg, Min
3	Density (gm/cc)	3.14	_
4	Standard Consistency (%)	27.5%	Not specified
5	Initial Setting time	170 minutes	Not less than 30 minutes
6	Final Setting time	260 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5mm	Not more than 10 mm

Note:

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

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R.KARTHIK RECHAN
Authorized Signatory
Quality Manager

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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2019-03-05-18** **Date: 19-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer's Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	21-01-19
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	22-01-19
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.6N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.4N/mm^2	Not less than 37 N/mm^2
3	28 Days	58.6N/mm^2	Not less than 53 N/mm^2

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2019-03-05-18** **Date: 24-01-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer's Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	21-01-19
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	21-01-19

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	423	423	2.8	97.2	90-100
3	20 mm	5852	6275	41.8	58.2	30-70
4	10 mm	4232	10507	70.0	30.0	10-35
5	4.75 mm	4225	14732	98.2	1.8	0-5
6	Pan	268	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2019-03-05-18** **Date: 24-01-19**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.3	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.6	
3	Specific Gravity	2.68	_
4	Bulk Density(Loose) (Kg/l)	1.56	_
5	Bulk Density(Compacted) (Kg/l)	1.59	_
6	Water Absorption(%)	0.23	_

Note:
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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2019-03-05-18** **Date: 24-01-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	21-01-19
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	21-01-19

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	278	278	5.6	94.4	90-100
3	10 mm	2754	3032	60.6	39.4	25-55
4	4.75 mm	1754	4786	95.7	4.3	0-10
5	Pan	214	5000	100	0	_

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2019-03-05-18** **Date: 24-01-19**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.2	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.7	
3	Specific Gravity	2.69	_
4	Bulk Density(Loose) (Kg/l)	1.53	_
5	Bulk Density(Compacted) (Kg/l)	1.54	_
6	Water Absorption(%)	0.25	_
7	Aggregate crushing Value(%)	23.3	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.7	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Authorized Signature
Quality Manager

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2019-03-05-18** **Date: 24-01-19**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 21-01-19

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 21-01-19

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	86	86	8.6	91.4	90-100	90-100	90-100	95-100
3	2.36 mm	145	231	23.1	76.9	60-95	75-100	85-100	95-100
4	1.18 mm	156	387	38.7	61.3	30-70	55-90	75-100	90-100
5	600 micron	188	575	57.5	42.5	15-34	35-59	60-79	80-100
6	300 micron	175	750	75.0	25.0	5-20	8-30	12-40	15-50
7	150 micron	162	912	91.2	8.8	0-10	0-10	0-10	0-15
8	Pan	88	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2019-03-05-18** **Date: 24-01-19**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	2.4	–
2	Specific Gravity	2.59	–
3	Material finer than 75 micron(%)	5.9	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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Quality Manager

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TEST RESULTS OF STEEL

Lab ID : **CP-2019-03-05-18** **Date: 29-01-19**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 28-01-19

Sample Type : Sunvik

Reference to BIS codes : IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012.

Date of test: : 28-01-19

Sl.No	Identification of sample	Grade of the sample	Diameter of the steel bar	Weight of the sample	Yield stress	Tensile strength	Elongation	Bend test	Rebend test
			(mm)	(kg/m)	(N/mm2)	(N/mm2)	(%)		
1	Sunvik	Fe500	8	0.392	514	652	20.0%	Satisfactory	Satisfactory
2	Sunvik	Fe500	10	0.614	527	674	20.0%	Satisfactory	Satisfactory
3	Sunvik	Fe500	12	0.886	546	669	20.0%	Satisfactory	Satisfactory

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-03-05-18** **Date: 09/02/2019**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-02-19

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 09/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	02/02/2019	09/02/2019	149.40 X 151.60 X 149.40	22649	**8.150**	425.5	18.8	18.6
2	PCC	M20	02/02/2019	09/02/2019	150.60 X 151.45 X 149.57	22808	**8.208**	424.6	18.6	
3	PCC	M20	02/02/2019	09/02/2019	149.78 X 150.72 X 149.07	22575	**8.864**	415.2	18.4	

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-03-05-18** **Date: 02/03/2019**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-02-19

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 02/03/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	02/02/2019	02/03/2019	150.22 X 151.35 X 150.34	22736	**8.012**	543.5	23.9	23.2
2	PCC	M20	02/02/2019	02/03/2019	149.59 X 151.39 X 150.34	22645	**8.582**	514.7	22.7	
3	PCC	M20	02/02/2019	02/03/2019	149.97 X 150.29 X 150.51	22539	**8.573**	518.7	23.0	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-03-05-18** **Date: 09/02/2019**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-02-19

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 09/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	02/02/2019	09/02/2019	150.19 X 150.38 X 149.02	22586	**8.150**	408.6	18.1	18.4
2	PCC	M20	02/02/2019	09/02/2019	150.75 X 149.85 X 150.28	22590	**8.208**	413.2	18.3	
3	PCC	M20	02/02/2019	09/02/2019	149.06 X 151.19 X 151.01	22536	**8.864**	421.2	18.7	

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Quality Manager

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****End of Report****

Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-03-05-18** **Date: 02/03/2019**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer's Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-02-19

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 02/03/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	PCC	M20	02/02/2019	02/03/2019	151.92 X 149.00 X 149.11	22636	**8.012**	542.2	24.0	23.4
2	PCC	M20	02/02/2019	02/03/2019	151.87 X 149.78 X 150.00	22747	**8.582**	507.8	22.3	
3	PCC	M20	02/02/2019	02/03/2019	150.87 X 150.49 X 151.51	22705	**8.573**	544.3	24.0	

Note:

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****End of Report****

TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2019-03-05-18**	**Date: 13-02-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.	
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.	
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.	
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	11-02-18	
Type of Mix	:	WMM (Wet Mix Macadam)	
Date of test	:	11-02-18	
Oven Dry Weight	:	11000	Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

Note:-

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 13-02-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-02-18
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	11-02-18

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 13-02-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-02-18
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	11-02-18

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 21-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer's Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	20-02-19
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	20-02-19

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**66**	60 to 70
2	Softening Point, °C	**51.4**	Min. 40°C
3	Ductility, cm	**96**	Min. 75cm
4	Flash point, °C	**244**	Min. 220°C
	Fire point, °C	**270**	

Note:-

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 21-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer's Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	20-02-19
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	20-02-19

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**66**	60 to 70
2	Softening Point, °C	**51.4**	Min. 40°C
3	Ductility, cm	**96**	Min. 75cm
4	Flash point, °C	**244**	Min. 220°C
	Fire point, °C	**270**	

Note:-
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TEST RESULTS OF GRADATION FOR SDBC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 27-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	25-02-19
Type of Mix	:	SDBC-Plant (Semi Dense Bituminous Concrete)
Date of test	:	25-02-19
Weight of Sample	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0.0	100.0	100
9.5	410	410	8.2	91.8	90-100
4.75	2187	2597	51.9	48.1	35-51
2.36	1038	3635	72.7	27.3	24-39
1.18	525	4160	83.2	16.8	15-30
0.3	503	4663	93.3	6.7	9-19
0.075	169	4832	96.6	3.4	3-8
PAN	168	5000	100.0	0.0	0

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE

Lab ID : **CP-RW-2019-03-05-18** **Date: 28-02-19**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 25-02-19

Type of Mix : SDBC (Semi Dense Bituminous Concrete)

Date of test : 25-02-19

Physical Requirements fo Coarse Aggregate for Semi Dense Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	11.1	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	9.5		
Strength	Aggregate Impact Value	21.8	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.58	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.31	Maximum 2%	IS:2386 Part III

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 28-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	25-02-19
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	25-02-19
Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	99.0	1.0	98.8	Minimum Retained Coating 95%
2	98.5	1.5		
3	99.0	1.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2019-03-05-18** **Date: 28-02-19**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.
Agency	:	B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.
Customer Reference	:	BBMP/EE/BTP/WO/200/2016-17
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	25-02-19
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	25-02-19

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-16
1	Marshal Stability at 60°C, KN	10.54	10.11	8.2KN(min)
2	Marshal flow at 60°C, mm	3.22	3.29	2-4
3	Percent air Voids	4.59	4.25	3-5
4	Percent Voids in mineral Aggregate(VMA %)	13.88	13.94	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.32	70.0	65-75
6	Density, g/cc	2.26	2.24	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR SDBC
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID : **CP-RW-2019-03-05-18** **Date: 05-03-19**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Jakkur in Ward No.05 Byatarayanapura Sub Division.

Agency : B.R.Dhananjaya, #22/A, Gundappa Road, Flour Mill Road, Nagashetehalli, RMV II nd Stage, Bangalore-560094.

Customer Reference : BBMP/EE/BTP/WO/200/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-03-19

Type of Mix : SDBC (Semi Dense Bituminous Concrete)

Date of test : 04-03-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	478	477
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.4	4.6
4	Average percentage	%	4.5	

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Lab ID : **CP-RW-2019-03-05-18** **Date: 05-03-19**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 478

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	31	31	6.49	93.5	90-100
4.75	213	244	51.05	49.0	35-51
2.36	63	307	64.23	35.8	24-39
1.18	39	346	72.38	27.6	15-30
0.3	71	417	87.24	12.8	9-19
0.075	34	451	94.35	5.6	3-8
PAN	27	478	100.00	0.0	0

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 477

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	29	29	6.08	93.9	90-100
4.75	215	244	51.15	48.8	35-51
2.36	62	306	64.15	35.8	24-39
1.18	41	347	72.75	27.3	15-30
0.3	66	413	86.58	13.4	9-19
0.075	32	445	93.29	6.7	3-8
PAN	32	477	100.00	0.0	0

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